RCRA FACILITY ASSESSMENT REPORT

Conbraco Industries, Inc.

1509 Van L. Mungo Boulevard
Pageland, South Carolina
EPA I.D. #: SCR 000 006 155

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
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Table 1
Solid Waste Management Units

SWMU #	SWMU Name	Type of Unit	Period of Operation	Waste Managed	Recommendation
15	Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area	Waste Storage Area	1998 - Present	Miscellaneous Non-Hazardous and Hazardous Waste	No Further Action
16	Old Sand Storage Tank	Storage Tank	1998 - 2000	Foundry Sand	No Further Action
17	Ballmill Area	a. Hazardous Waste Hopper Storage Area b. Ballmill Screens and Small Pieces Storage Drum c. Ballmill Baghouse d. Former Thermal Treatment Unit	1998 - Present	Metal Trailings, Metallic Dust, Core Pieces, and Foundry Sands	No Further Action
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EXECUTIVE SUMMARY

The Resource Conservation and Recovery Act (RCRA) and the Hazardous Waste and Solid Waste Amendments (HSWA) of 1984 provide the U.S. Environmental Protection Agency (EPA) with federal authority to require comprehensive corrective action for releases of hazardous constituents to air, surface water, soil, and groundwater at facilities that manage hazardous waste. The first step in the RCRA corrective action process is the RCRA Facility Assessment (RFA), which is conducted to determine if releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs) have occurred, and to identify potential areas of concern (AOCs) at the site. Under Task Order (TO) No. R04006, EPA Region 4 requested that Booz Allen Hamilton (Booz Allen) conduct an RFA at the Conbraco Industries, Inc. facility in Pageland, South Carolina (Conbraco-Pageland).

Conbraco Industries, Inc. has manufactured red brass alloy valves at the Conbraco-Pageland facility since 1998. Currently, Conbraco–Pageland manufactures approximately 15,000,000 brass castings each year. Brass castings are manufactured using a sand molding process, wherein a mold is produced by forming a sand mixture in the desired shape. The molten red brass alloy, containing copper, tin, zinc, and lead, is poured in the cavity of the mold to form the cast. The mold is then cooled until the metal has solidified. In the last stage, the casting is separated from the sand mold using physical agitation (Hunton & Williams, 2000). Most of the used sand from this process is reused in the manufacturing process. However, some of the used sand is discarded to allow for the addition of fresh sand and conditioning materials. The discarded sand materials, known as "foundry sands," contain hazardous constituents, primarily lead, at varying levels. This lead-contaminated sand is the primary hazardous waste stream (D008) generated at Conbraco–Pageland (Hunton & Williams, 2000).

Booz Allen assessors identified a total of twenty (20) solid waste management units (SWMUs) and one (1) AOC during the Conbraco-Pageland RFA (see Tables 1 and 2). No further action is recommended for all units.

FIGURES

TABLES

ATTACHMENTS

Table 2 Areas of Concern					
AOC #	**AOC Name**	**Type of Unit**	**Period of Operation**	**Waste Managed**	**Release Potential**
1	Sand Pile Area	Waste Pile	1998 - 2005	Foundry Sand	No Further Action

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1.0 INTRODUCTION

The RCRA Facility Assessment (RFA) is a process for the following:

- Identifying and gathering information on releases at RCRA-regulated facilities,
- Evaluating SWMUs and AOCs for releases to all environmental media,
- Making preliminary determinations regarding releases of concern and the need for further actions at the facility, including interim measures, and
- Screening from further investigation those SWMUs and AOCs that do not pose a threat to human health or the environment.

SWMUs are defined as any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA-regulated hazardous waste management units are also SWMUs. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities (e.g., product or product spills).

An AOC includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a SWMU and is determined to pose a current or potential threat to human health and the environment. AOCs may require investigations and remedial action, as required under Section 3005 (c)(3) of RCRA and 40 CFR 270.32 (b)(2), in order to ensure adequate protection of human health and the environment.

All three steps of the RFA require the collection and analysis of data to support initial release determinations:

- The preliminary review (PR) focuses primarily on evaluating existing information, such as inspection reports, permit applications, historical monitoring data, and interviews with state personnel who are familiar with the facility.
- The visual site inspection (VSI) entails onsite collection of visual information to obtain additional evidence of release.
- If needed, the sampling visit (SV) fills data gaps that remain upon completion of the PR and VSI.

An RFA is typically performed when RCRA permits are issued/modified, when a facility ceases to manage hazardous wastes, or as a means to gather updated Corrective Action information for a facility (EPA 1986). Conbraco-Pageland completed significant activities to address the requirements of a Final Complaint and Compliance Order (CACO), Docket No. RCRA-04-2003-4013, which required management of thermally processed sands located at Conbraco–Pageland.

To address the "Thermal Treatment Unit" listed in Paragraph 25 of the CACO, Conbraco decommissioned and decontaminated the Thermal Treatment Unit in March 2000 and developed the Thermal Treatment Unit Closure Report. To address the AOC ("Sand Pile") listed in Paragraph 26 of the CACO, Conbraco developed a Closure Plan to excavate, stabilize, stockpile, and dispose of the foundry sand and lead-contaminated soil. The plan was approved by EPA in June 2005, the remediation activities were performed in July and August 2005, and Conbraco developed a Closure Report in October 2005. Both Closure Reports have been submitted to EPA and are currently awaiting approval (Shield Engineering, 2004; U.S. EPA, 2004; U.S. EPA, 2005).

1.1 Preliminary Review

In July 2008, Booz Allen reviewed documentation pertaining to Conbraco in files maintained by EPA Region 4 and South Carolina Department of Health and Environmental Control (SCDHEC). Several months after the VSI had been completed; EPA identified a significant quantity of additional file material that had not been made available to Booz Allen during the original file review. As a result, Booz Allen performed additional file reviews at EPA Region 4 in late July 2009 to collect documents from the additional files. The documents reviewed included: (1) general correspondence with state and federal agencies concerning the facility, (2) RCRA compliance inspections, (3) permit applications or modifications, (4) administrative orders (AOs) and consent agreements (CAs) issued by NCDENR and EPA, (5) groundwater monitoring reports, (6) closure documentation, (7) documents pertaining to corrective action and remedial activities, and (8) various facility maps and process diagrams. The references used to prepare this report are listed in Section 6.

The focus of the PR was on past and current site waste management practices involving waste generation, treatment, storage, and/or disposal. Other activities and areas not involving waste were also reviewed to determine the potential for releasing contaminants to the environment (e.g., drums, raw materials, product storage areas, fuel storage or transfer areas, etc.). Based on the PR, Booz Allen prepared a tentative list of SWMUs and AOCs to plan the VSI. Booz Allen also identified information that needed to be gathered during the VSI to fully assess the potential for releases from SWMUs and AOCs.

1.2 Visual Site Inspection

On September 4, 2008, Booz Allen performed the VSI in coordination with representatives from EPA Region 4, SCDHEC, Conbraco Industries, and Shield Engineering (Conbraco consultant). During the VSI, Booz Allen inspected each SWMU and AOC identified during the PR. A meeting with site representatives was also held to fill the data gaps identified during the PR. All participating parties for the EPA/SCDHEC/Booz Allen/Conbraco team are listed below (Booz Allen, 2008):

- Kim Gates, RCRA Project Manager, EPA Region 4

- John Belin, Associate, Booz Allen Hamilton
- Christopher Rees, Associate, Booz Allen Hamilton
- Stanley Worthington, SCDHEC
- Charles Airington, Environmental Manager, Conbraco Industries
- Carroll Jenkins, Facilities Manager, Conbraco Industries
- Pat Orman, Director of Operations, Conbraco Industries
- Dave Sherman, Conbraco Industries
- Steve Peephes, Conbraco Industries
- Brad Cvetovich, Conbraco Industries
- David Stoner, Senior Principal/Vice President, Shield Engineering

1.3 RFA Report

This report provides (1) a description of the facility and all SWMUs and AOCs identified during the PR, (2) a discussion of the release potential of hazardous wastes or hazardous constituents through various migration pathways, and (3) a summary of conclusions and recommendations regarding the need for further remedial activities; such as Confirmatory Sampling (CS), a RCRA Facility Investigation (RFI), Interim Measures (IMs), and/or additional assessment activities. The RFA report also contains tables (SWMU and AOC lists), figures (facility location, surrounding land use, onsite sampling locations, and the locations of the SWMUs and AOCs) and several attachments. Attachment 1 contains a photographic log from the VSI, and Attachment 2 contains copies of the Booz Allen VSI team logbooks.

This RFA Report has been significantly delayed due to a combination of events that occurred after the VSI was conducted at this site. At the direction of the EPA TOCOR, no new information has been collected since the file reviews were completed in July 2009.

2.0 FACILITY DESCRIPTION AND HISTORY

2.1 Location and Land Use

Conbraco–Pageland is a brass foundry located in Pageland, South Carolina in Chesterfield County as shown in Figure 1. The geographical location of the facility is latitude 34° 45' 23" N and longitude 80° 22' 48" W. The location of the facility is a predominantly rural area as shown in Figure 2. The Conbraco–Pageland facility is bounded on the northwest by the Highway 151 Bypass; on the southwest by mostly undeveloped, wooded lots along Rollings Road; and on the east by single-family residences along Evans Mill Road. The entire Conbraco–Pageland property comprises approximately 35 acres and includes a 200,000 square foot (ft^2) building space. A fence surrounds the facility property and a single gate controls the entrance. Large, open, grassy areas surround the Conbraco-Pageland building on all sides. The perimeter of the facility is monitored by security cameras along the fence line. The land use surrounding the Conbraco-Pageland facility consists primarily of undeveloped, wooded land to the southwest, west, and northwest, sparsely populated residential property to the south and east, and a mix of light industrial, recreational, commercial, and residential to the northeast (U.S. EPA, 2000; Booz Allen, 2008).

Prior to construction of the Conbraco–Pageland facility, the site was wooded, undeveloped land. The nearest residences are located to the east and northeast, along the west side of Evans Mill Road, adjacent to the Conbraco-Pageland property boundary (see Figure 2). These residences are approximately 300 ft away from the facility boundary. Approximately 800 people live within one mile of the facility (Booz Allen, 2003; Envirofacts, 2010).

According to the South Carolina Department of Parks, Recreation, and Tourism, no records of any rare or threatened species or critical habitats have been identified at the Conbraco–Pageland property (http://www.scprt.com/, 2010).

The closest recreational area is Baucom Park located approximately 2,500 feet southwest of the facility. The closest sensitive environment is the Carolina Sandhills National Wildlife Refuge, located approximately ten miles southeast of the site. The nearest school to the site is Central High School, located approximately one mile east of the site.

Additional pertinent information is listed below.

Facility Mailing Address:	1509 Van L. Mungo Boulevard Pageland, South Carolina 29728
Facility Contact:	Charles Airington, Environmental Manager
EPA Identification #:	SCR 000 006 155

2.2 Facility Status

In March 1998, Conbraco–Pageland began operating a foundry at the site to manufacture red brass alloy valves. The facility is currently operational and manufactures approximately 15 million red brass castings per year, which are sold throughout the United States as well as internationally. According to RCRA Info, the Conbraco-Pageland site is classified by both EPA and SCDHEC as a large quantity generator (LQG) of hazardous waste. The Biannual Report for the Conbraco-Pageland facility indicates that the following hazardous wastes were generated: machining wastewater, naphtha solvent, sludge containing brass chips, lead-contaminated solids (foundry sand), and parts cleaner solvent (Conbraco Response to Info Request, 2000; RCRA Info, 2010).

2.3 Current Waste Generation and Management Practices

The brass casting process uses sand molds, wherein a mold is produced by forming a sand mixture in the desired shape. Facility members pour molten liquid red brass alloy into the cavity of the mold to form the cast (in this case, a valve). Red brass refers to a composition of brass that contains approximately 85% copper, 5% lead, 5% tin, and 5% zinc. The mold containing the red brass is then cooled until the metal solidifies. In the last stage, physical agitation separates the valves from the sand mold (Hunton & Williams, 2000; Booz Allen, 2008).

The casting molds used in the sand molding process contain silica (87-92%), bentonite clay and organic binders (5-8%), wood cellulose (3-4%), and water (2-3%). Facility members mix these

components at Conbraco–Pageland in one of two large mullers. Facility members convey these molding sands to the molding machine where they press them in the negative impression of the different valves, forming the molds for the various products produced by Conbraco (Hunton & Williams, 2000).

Being that most of the products manufactured by Conbraco contain hollow spaces, facility members place "cores" inside the molds to create the cavities within the valves. The method is referred to as the "shellcore" process, and the cores are made of "core sands." Conbraco produces these core sands by mixing sand with an inorganic resin binder. When this resin is heated, the resin melts and bonds the sand grains together. Facility employees then place these cores in molds to form the interiors or inside shapes of the valves. These core sands are broken down thermally during casting (Hunton & Williams, 2000).

Facility members mix the components of the red brass alloy in large furnaces on the pour deck, and then transfer the molten alloy using a pouring ladle into the molds to create the brass valves. Once cooled, facility members transfer the casting by vibratory conveyor to a perforated screen at the shakeout area. Physical agitation on the conveyor and at the shakeout separates the valves from the molding sands, metal fragments, and core pieces (Hunton & Williams, 2000; Booz Allen 2008).

Facility members transfer the newly formed rough castings to a shot blast machine referred to as the foundry "wheelabrator." Inside the wheelabrator, stainless steel shot is fired at the brass valves to smooth and clean the surfaces and edges. The shot also removes any molding sand that may remain attached to the outside or the inside of the valves. The cleaned valves are then transferred to the grinding area where facility members manually remove excess metal from the valves using grinders. The castings are then given a final inspection before being shipped out as product (Hunton & Williams, 2000; Booz Allen 2008). Conbraco–Pageland generates various waste streams, of which, lead-contaminated foundry sands are the primary hazardous waste stream. The facility also generates non-hazardous foundry sands, slag, metallic-bound phosphate, miscellaneous solid waste, and miscellaneous lead-contaminated hazardous waste.

During the Conbraco–Pageland sand molding process, the foundry sands are reused. Figure 3 provides a schematic of the sand process used at the Pageland facility. Facility members collect used sand molds and capture loose sand so that they can be inserted back into the process. Grates are located throughout the facility, and facilitate the capture of sand in sumps, prior to conveying the sand via the spill sand conveyor to the rotary screen. The vibratory conveyor transfers the newly made castings to a perforated screen at the shakeout area. During this process, facility members collect and transfer the molding sands, metal fragments, and core pieces on the return elevator (conveyor belt) to the rotary screen (Hunton & Williams, 2000; Booz Allen, 2008).

At the rotary screen, facility members screen and separate the foundry sands, core pieces, and metal fragments. The core pieces and metal fragments are collected in a large bin at the Rotary Screen Trailing Hazardous Waste Storage Area (SWMU 11) and foundry sands are deposited into the 250-ton sand storage tank. The sand storage tank stores all of the sand used in the sand molding process. Sand from the sand storage tank is continually transferred to a centrifuge that removes metal particulates, and the sand is subsequently returned to the storage tank. Facility

members collect these metal particulates in drums and sell the material to off-site metal reclamation facilities. Some of the foundry sand stored in the sand storage tank is replaced with fresh sand and conditioning materials (Hunton & Williams, 2000; U.S. EPA, 2000; Booz Allen 2008).

The introduction of new sand is necessary to maintain the overall quality of the molding sand as well as to compensate for the fines lost from dust collection and sand degradation. Over time, the concentration of metal contaminants in the used sand increases resulting in insufficient bonds during the molding process. To maintain an operative composition of foundry sand, facility members clean the sand in the Sand Laundry and continually introduce new sand to the process at a rate of approximately one percent (2.5 tons) per day. As part of the current process, to make room for the new sand, used foundry sands are scalped from the tank, sent down a chute, and collected at the Waste Sand Scalp-Off Area (SWMU 10) in fabric totes at a rate of approximately six to eight tons per day. Once full, the fabric totes are stored at the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) prior to being shipped to Canada for hazardous waste disposal (Hunton & Williams, 2000; U.S. EPA, 2000; Booz Allen, 2008).

All of the sand handling equipment is connected to a dust collection system. The dust is transferred to the sand system baghouse where the material is collected in fabric totes at a rate of approximately 2.5 tons per day. The contents of the fabric totes are sampled, and the fabric totes are stored at the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) pending the analytical results for leachable lead. If the contents are identified as nonhazardous, the totes will be shipped to the Ridgeland County Subtitle D Landfill. If the contents are discovered to be hazardous waste (D008), the totes are shipped to a Subtitle C Landfill in Emile, Alabama for disposal (Hunton & Williams, 2000; Booz Allen, 2008).

Molding sand, core pieces, and metal fragments are removed from the brass valves at the foundry wheelabrator. These materials are screened, and the sand and shot are transferred through a chute to a fabric tote. Conbraco–Pageland transfers these fabric totes to the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) to store them prior to being shipped to Canada for hazardous waste disposal. A large bin collects the core pieces and metal fragments at the Foundry Wheelabrator Hazardous Waste Collection Area (SWMU 12) (Hunton & Williams, 2000; U.S. EPA, 2000; Booz Allen, 2008).

Conbraco–Pageland transfers the core pieces and metal fragments collected at the Foundry Wheelabrator Hazardous Waste Collection Area (SWMU 12) and the Rotary Screen Trailing Hazardous Waste Storage Area (11) to the Ballmill Area (SWMU 17) for processing. The ballmill separates the metal fragments, cores, and sand using a crushing and grinding process. Facility members return the recovered larger metal pieces to the furnace, and smaller metal pieces are collected in drums. The drummed metal pieces are then transferred by facility members to the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) and ultimately sell the material to off-site metal reclamation companies. The sand separated by the ballmill is collected in a bin, which is then transferred to a roll-off container at the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15), and ultimately shipped to a Subtitle C Landfill in Emile, Alabama as D008 waste. A baghouse captures the dust created during the ballmill separation process, and the dust is

collected in fabric totes. Facility members transfer the fabric totes containing the ballmill baghouse dust to the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13), and eventually ship the material to Canada for hazardous waste disposal (U.S. EPA, 2000; Booz Allen, 2008).

Conbraco–Pageland is equipped with various ventilation systems. Hoods located above the brass furnaces collect and transfer fumes to the metallurgical baghouses. The fumes are injected with a triple super-phosphate that binds to the metals contained therein. Fabric totes collect the metallic-bound phosphate, facility members subsequently transfer the totes to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15). Then fabric totes are then shipped to the Ridgeland County Subtitle D Landfill. Hoods located in the grinding area collect dust particles associated with grinding activities, and subsequently convey them to the grinding room baghouse where the dust particles are collected in drums. Once full, these drums are transferred to the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) and are eventually sold to off-site metal reclamation companies (Booz Allen, 2008).

Conbraco–Pageland also generates the following secondary wastes during the valve molding process.

- Broken pieces of cores which are never used in the casting process, are collected in drums, transferred to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15), and then disposed of as non-hazardous waste.
- The impurities from the molten metal referred to as "slag" are cooled prior to collection in a bin inside the Hot Slag Storage Area (SWMU 7). Collected cooled slag is sold to off-site facilities each week.
- The Furnace Deck Hazardous Waste Hopper (SWMU 8) collects other wastes (i.e., Koaol wool, stopper rods, etc.) contaminated with fumes from the furnace. The other collected wastes are then transferred by facility members to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15). The other collected wastes are ultimately transferred off-site for disposal at the Subtitle C Landfill in Emile, Alabama as D008 hazardous waste (U.S. EPA, 2000; Booz Allen, 2008).

2.4 Past Waste Generation and Management Practices

Conbraco operated a Thermal Treatment Unit (TTU) at the Pageland facility from 1998 to 2000, when the unit was decommissioned. The TTU received used foundry sand from the ballmill, Wheelabrator shot blast unit, and the sand loop system. At the TTU, waste sand was deposited in a receiving hoper, fed into magnetic separators, and was then run through a screen where metals were separated from the sand for off-site recovery. The remaining sands were then routed to the TTU for thermal processing. The processing was accomplished by heating the sands in a rotary kiln to approximately 1,500 degrees Fahrenheit (F), causing the vitrification of the lead-bearing sands. The thermal heating and vitrification of sands was expected to remove the binders in the sands, which would allow for reuse of the sands in the manufacturing process, by binding the lead to the silica. TCLP analysis of thermally treated sand however, indicated that processed sand still contained leachable lead levels in excess of the TCLP regulatory level for lead (15 mg/kg). Conbraco never applied for, nor received a permit for treatment of spent

foundry sand in the TTU. A Closure Report documenting the decommissioning and deconstruction of the TTU in 2004 was submitted and accepted by EPA (EPA 2000; Shield, 2004).

While the TTU was being operated at the Pageland facility, Conbraco stored thermally processed foundry sand in a Sand Pile Area (AOC 1) located in the northern corner of the Pageland property. Pursuant to 40 CFR §§ 261.2(a)(2) and 261.2(b)(1), this practice constituted illegal disposal because the thermally processed foundry sand was later shown to fail the TCLP leachibility test (U.S. EPA, 2000; Booz Allen, 2008).

2.5 Regulatory Highlights

2.5.1 Air

SCDHEC issued draft Air Permit No. CM-0660-0039 to Conbraco Pageland on December 29, 2009, thereby allowing the facility to produce emissions under a Conditional Major Operating Permit. The permit limits the Conbraco Pageland facility to emissions below Title V Major Source thresholds. The Conbraco Pageland facility is also listed as a Toxic Release Inventory (TRI) facility under TRI Identification Number 29728CNBRC1509V.

2.5.2 RCRA

According to RCRA Info, the Conbraco-Pageland site is currently classified by both EPA and SCDHEC as a large quantity generator (LQG) of hazardous waste. The Biannual Report for the Conbraco-Pageland facility indicates that the following hazardous wastes were generated: machining wastewater, naphtha solvent, sludge containing brass chips, lead-contaminated solids (foundry sand), and parts cleaner solvent (RCRA Info, 2010).

The following provides a chronological summary of key dates in the RCRA regulatory process associated with the Conbraco-Pageland site.

1997

December: Conbraco Industries notified EPA Region 4, NCDENR, and SCDHEC of discovery and response efforts involving the disposal of approximately 30,000 tons of foundry sand from the Conbraco-Matthews facility at off-site locations in South Carolina.

October: Conbraco entered in an Administrative Order (AO) on Consent, Docket No. RCRA-04-2002-4250 and RCRA-04-2002-4251, with EPA to perform site assessments at the 17 off-site locations. Conbraco–Pageland became responsible for addressing the South Carolina sites.

1998

February: Conbraco provided a Notification of Hazardous Waste Activity to SCDHEC and was classified as a LQG of ignitable and D008 wastes.

March: The Conbraco-Matthews facility ceased foundry operations and transferred

foundry activities and equipment to a new Conbraco-Pageland facility located in Pageland, SC.

April: Conbraco submitted a letter report to SCDHEC that provides a chronology of events associated with off-site disposal of foundry sands.

1999

February: SCDHEC referred the manifest and transportation violations for the Conbraco-Pageland site to EPA for enforcement.

April: Conbraco Industries submitted a Remedial Action Work Plan to perform removal and remediation activities at four sites near Pageland, SC.

December: Conbraco performed site assessment activities at the Pageland facility to characterize the Soil Pile Area.

2000

February: EPA conducted a Compliance Evaluation Inspection at Conbraco–Pageland and multiple violations were documented. Based upon violations discovered during the inspection, EPA designated Conbraco–Pageland as a "Significant Non-Complier" and agreed to take the lead on enforcement activities (U.S. EPA, 2000).

March: Conbraco decommissioned and decontaminated the Thermal Treatment Unit.

EPA sent a Request for Information to Conbraco regarding operations and waste management practices at the Pageland facility (U.S. EPA, 2000).

April: Conbraco submitted the Reclaimed Foundry Sand Assessment Report.

Conbraco submitted a Response to Request for Information Pursuant to Section 3007 of RCRA (Conbraco, 2000).

May: EPA Science and Ecosystem Support Division (SESD) conducted a sampling investigation in support of a Case Development Inspection / Evaluation (CDIE).

July: Conbraco submits a Request for Extension of Time to EPA Region 4 regarding the July 18 Request for Information (Conbraco, 2000).

Conbraco submits Responses to Request for Information Pursuant Section 3007 of RCRA (Hunton & Williams, 2000).

September: EPA Region 4 submitted a *Request that Civil Litigation be Commenced Under RCRA in Connection with Conbraco Industries, Inc.* for treatment and disposal of hazardous waste material without a permit at the Conbraco-Pageland facility in Pageland, SC.

EPA conducted a Compliance Evaluation Inspection (CEI) and a Case Development Inspection Evaluation at the Conbraco facility. Violations included the failure to make a waste determination, failure to label hazardous waste storage containers, and the failure to properly store hazardous waste (U.S. EPA, 2000).

October: Conbraco submits responses to CEI/CDEI Inspection Report to the EPA. The response letter identifies actions taken by Conbraco to correct violations identified during the inspections conducted in February and May, 2000 (Conbraco, 2000).

2001

June: Conbraco submits Proposal for Foundry Materials Stabilization to SCDHEC. In the request, Conbraco ask for permission to use a phosphate-based chemical treatment process to stabilize the spent foundry sand (Conbraco, 2001).

October: EPA issued Administrative Order on Consent requiring Conbraco Industries to submit Site Assessment Work Plans within 30 days for eight off-site sand disposal locations in North Carolina and nine locations in South Carolina.

2002

February: Conbraco submits a Proposal for Wheelabrator Sand Stabilization request to SCDHEC. In the request, Conbraco asks SCDEHC for permission to use a phosphate-based chemical treatment process to stabilize the spent foundry sand (Conbraco, 2002).

2003

July: Conbraco–Pageland received No Further Action status from SCDHEC at three locations in South Carolina (Jenkins Property, Joseph Hendrix, and Mills Property Pond).

September: EPA issued a Complaint and Compliance Order (CACO) to Conbraco Industries on September 25, 2003, for twelve counts of failure to meet RCRA regulations, including but not limited to the following: "operation of hazardous waste management units without a permit," "failure to operate in a way to minimize the potential for release of hazardous constituents," and "disposal of hazardous waste on the land without meeting land disposal restrictions."

2004

January: Conbraco completed remedial activities at one additional location (Player Sand Pit) and received No Further Action status from SCDHEC.

April: A Final Complaint and Compliance Order (CACO), Docket No. RCRA-04-2003-4013, became effective between Conbraco and EPA, which required Conbraco to operate the TTU in compliance with applicable RCRA regulations and to appropriately address the waste foundry sand and thermally processed sands located in the Sand Pile Area.

May: Submitted the Thermal Treatment Unit Closure Report as required by the CACO.

December: To address the AOC ("Sand Pile") listed in Paragraph 26 of the CACO, Conbraco developed a Closure Plan to excavate, stabilize, stockpile, and dispose of the foundry sand and lead-contaminated soil.

2005

June: The Closure Plan for the Pageland Facility Foundry Sand Stockpile was approved by EPA (U.S. EPA, 2005).

July: Remediation activities began to address Sand Pile.

October: Conbraco developed a Closure Report, which was submitted to EPA for approval.

2008

September: EPA performed a VSI at the site on September 4, 2008.

October: Conbraco Industries responded to EPA's request for information provided in the VSI Notification Letter dated August 19, 2008.

2.6 Site Investigation and Cleanup Activities

In December 1999, Conbraco performed site assessment activities at the Pageland facility to characterize the Soil Pile Area. Five samples were collected from the stockpiled foundry sand and lead-contaminated soil. The samples were analyzed for total lead and toxicity characteristic leaching procedure (TCLP) lead. Total lead levels ranged from 820 mg/kg to 3,200 mg/kg. TCLP lead levels ranged from 3.2 to 5.1 milligrams per liter (mg/L) (Shield, 2005).

In May 2000, the EPA conducted a Case Development Inspection/Evaluation (CDIE). The primary objectives of the investigation were to determine if the foundry sand was a RCRA hazardous waste for lead (D008) and if the foundry sand exceeded the land disposal restrictions (LDR) limits for lead. SESD collected 13 on-site sand samples, nine from process areas and four from on-site sand piles and were analyzed for total lead content. Samples collected from the process areas ranged from 83 milligrams per kilogram (mg/kg) to 11,000 mg/kg of total lead. Samples collected from the sand pile ranged from 1,100 mg/kg to 2,800 mg/kg of total lead. The sand pile samples were also analyzed for TCLP lead. TCLP lead levels ranged from 4.6 to 8.9 mg/L, which exceeds the TCLP regulatory level of 5.0 mg/L (U.S. EPA, 2000; Shield, 2005).

In response to a 2004 CACO, Conbraco–Pageland submitted a Closure Plan to EPA in June 2004 and an addendum in June 2005 to address the pile of contaminated soil. In June 2005 EPA approved the Soil Pile Area Closure Plan. In July and August 2005, Conbraco excavated, stabilized, and disposed of the thermally processed sands and any underlying soils which exceeded lead concentrations of 400 mg/kg. After completion of closure activities, Conbraco collected and analyzed nine confirmation samples. The results of the confirmation samples for

total lead concentrations ranged from non-detect to 43.5 mg/kg. As a result, Conbraco–Pageland developed a Closure Report, which Conbraco–Pageland then submitted to EPA in October 2005.

3.0 ENVIRONMENTAL SETTING

3.1 Topography

The topography of the Conbraco–Pageland site is slightly sloped. Figure 4 provides a topographic map of the area surrounding the Pageland facility. Elevations at the Conbraco–Pageland site range from approximately 592 ft National Geodetic Vertical Datum (NGVD), just southeast of the facility to approximately 520 ft NGVD in the southwestern portion of the property. From the peak, southeast of the facility, the topography slopes to the south, southwest, west, and northwest.

3.2 Surface Water

The topographic highpoint located just east of the facility serves as a surface water divide. Runoff on the east side of the highpoint discharges to the unnamed tributary that discharges into Black Creek. Runoff from the east of this high point discharges in Cattail Brook. A small pond is also present on the Conbraco–Pageland site just northwest of the facility (Booz Allen, 2008; trails.com, 2010).

3.3 Geology

The Conbraco site is located in Pageland in Chesterfield County, South Carolina. Geologically the site is located near the Fall Zone between the Carolina Slate geologic belt of the Piedmont and Coastal Plain Physiographic Provinces. The Piedmont Physiographic Province (Piedmont) in South Carolina is subdivided (on the basis of lithologic, structural or metamorphic characteristics) into a series of northeast-trending belts of rock. The Carolina Slate Belt (Slate Belt) occurs as a relatively narrow band extending from central Georgia to central Virginia, and is characteristically composed of low to medium-grade metamorphosed volcanic and sedimentary rocks, often identified as argillite.

3.4 Groundwater and Hydrogeology

Local precipitation is the primary source of groundwater in the site vicinity. Based on the information in the available file material, no groundwater sampling has been performed at the Conbraco-Pageland site. Therefore, site-specific hydrogeology information is not available.

According to a report prepared by the South Carolina Department of Natural Resources, Land, Water, and Conservation Division in 2004 entitled *Ground-water Resources of Chesterfield County, South Carolina* (Groundwater Report), the depth to groundwater in the shallow aquifer is approximately 30 feet below ground surface. The total number of drinking water wells located near the Conbraco-Pageland site is currently unavailable. The aforementioned Groundwater Report however, indicates that 154 wells were installed in the shallow aquifer in Chesterfield County between 2001 and 2004, for residential and irrigation purposes (SCDNR, 2004).

Based on a review of the available file material, no groundwater investigation has been performed at the Conbraco Pageland site and no groundwater monitoring wells have been installed.

3.5 Local Climate

On average, there are approximately 200 sunny days per year in Chesterfield County, South Carolina. July average high temperatures are 91°F and January average low temperatures are 54°F. Pageland, South Carolina gets an average of 46.87 inches of precipitation per year (Southeast Regional Climate Center, 2010).

3.6 Threatened and Endangered Species

According to the South Carolina Department of Natural Resources, multiple threatened and endangered species have been identified in Chesterfield County. The available file material however, does not indicate that any rare or threatened species or critical habitats have been identified at the Conbraco-Pageland site (SCDNR website, 2010).

4.0 SWMU AND AOC DESCRIPTIONS

Based on the PR and information gathered during the VSI, a total of 20 SWMUs and one AOC were identified at Conbraco–Pageland. Figures 5 and 6 identify the location of SWMUs and AOCs. Attachment 1 includes a photographic log documenting the SWMUs and AOCs inspected during the VSI. Attachment 2 includes copies of the log books prepared by the Booz Allen field team.

The Release Pathway sub-header under each SWMU description ranks the probability that hazardous constituents were released to air, groundwater, surface water, sub-surface gas, and soil media from each SWMU. Each pathway is ranked as the following:

High (H)	Evidence indicates that a release of hazardous waste or hazardous constituents has occurred
Medium (M)	Evidence indicates that a release may have occurred
Low (L)	No evidence of release was found
Unknown (U)	Sufficient information is not available to make a determination

Evidence of a release is defined as visual signs of contamination, analytical documentation of a release, discharge permit violations, facility representative statements, or file material indicating a release.

4.1 SWMU 1 – Foundry Recyclable Materials Storage Areas

TYPE OF UNIT: Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 20 and No. 42

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of approximately thirty 55-gallon (gal) open, steel drums located at multiple locations throughout the facility for the storage of miscellaneous foundry materials. These drums are situated on a concrete pad, thereby preventing releases to the ground surface. A majority of these drums are in the eastern corridor of the foundry. The drums contain various items that are being stored temporarily before they are either reused in the process or sold to an off-site metals reclamation facility. In addition, several wire mesh bins located near the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) are used to collect cardboard prior to being transported off-site to a recycling facility (Booz Allen, 2008).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The various drums contain various types of waste materials including metallic dust, metal fragments, foundry sands, and other miscellaneous items. The wire mesh bins contain broken-down cardboard boxes.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND EVIDENCE OF RELEASE(S):

At the time of the VSI, these drums were in relatively good condition. No overflow was observed, and no staining was identified near or beneath the drums. No cracks were identified in the drums or in the underlying concrete pad (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.2 SWMU 2 – Foundry Miscellaneous Non-Hazardous Waste Storage Areas

TYPE OF UNIT: Waste Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 1

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of multiple plastic waste receptacles and 55-gal. steel drums used for the collection of non-hazardous waste throughout the facility. These drums are located in multiple locations on the concrete floor of the main Conbraco building, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The drums collect general solid waste. The types of waste managed in the drums include: office trash, industrial debris, and broken cores.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, these drums and waste receptacles were in good condition. No overflow was observed, and no staining was identified near or beneath the drums. No cracks were identified in the drums or in the underlying concrete pad upon which they were located (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur. In addition, exposure potential is low because no hazardous waste or hazardous constituents are managed in this unit.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.3 SWMU 3 – Foundry Miscellaneous Hazardous Waste Satellite Accumulation Areas

TYPE OF UNIT: Waste Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo Not Available

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of multiple 55-gal, steel drums located within the facility buildings to be used for the collection of miscellaneous hazardous waste, primarily floor sweepings that contain grinding dust and foundry sand. The Satellite Accumulation Areas (SAAs) were observed in multiple locations throughout the main Conbraco building. These drums are situated on the concrete floor of the main Conbraco building, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The purpose of these drums is to collect floor sweepings and other miscellaneous items contaminated during foundry operations or facility cleaning. Once full, the drums are transferred to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 18) prior to disposal as hazardous waste. Floor sweepings contain grinding dust and foundry sand, which are likely to be characteristic for lead (D008).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Ground Water (L) Subsurface Gas (L)

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, these drums were in relatively good condition. No overflow was observed, and no staining was identified near or beneath the drums. No cracks were identified in the drums or in the underlying concrete pad upon which they were located (Booz Allen, 2008).

EXPOSURE POTENTIAL: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:

No Further Action	(X)
Confirmatory Sampling	( )
RFI Necessary	( )

4.4 SWMU 4 – Furnace Fume Hood System and Metallurgical Baghouses

TYPE OF UNIT: Fume Hood and Baghouse

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 4 and 24

PHYSICAL DESCRIPTION AND HISTORY:

Two fume hoods are located approximately 8 ft above the furnaces on the pour deck, which is located in the northwestern portion of the main Conbraco building. Each metal fume hood is approximately 10 ft wide and 10 ft long. The hoods are connected to 8-inch vent piping that leads to a metallurgical baghouse. The metallurgical baghouses are located just outside the northeastern portion of the foundry along the eastern wall. The steel metallurgical baghouses are approximately 60 ft long, 40 ft wide, and 25 ft tall. They are connected to a phosphate injection mechanism that is approximately 6 ft long, 6 ft wide, and 10 ft tall. At the phosphate injection mechanism, fumes in the metallurgical baghouses are mixed with a triple super phosphate compound that binds with metals in the fumes. Metal-bound phosphate material falls out of the air and into fabric totes. Each unit is situated on a concrete pad.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The fume hoods capture fumes from the furnaces. The fumes primarily contain zinc oxide but also have trace amounts of lead (potentially D008 waste), copper, and chromium (potentially D007 waste). The fabric totes at the metallurgical baghouse are used to store the metal-bound phosphate material that falls out of the baghouses. Conbraco–Pageland transfers the fabric totes containing the metal-bound phosphate to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area before the material is shipped to the Ridgeland County Subtitle D Landfill.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the fume hoods, associated piping, metallurgical baghouse, and phosphate-adding mechanism were all in good condition. No staining was identified near or beneath the system and no overflow was observed at the phosphate-adding mechanism. No cracks were identified in the baghouse, the drums, or the underlying concrete pad upon which the baghouse is located (Booz Allen, 2008).

EXPOSURE POTENTIAL: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:

No Further Action	(X)
Confirmatory Sampling	( )
RFI Necessary	( )

4.5 SWMU 5 – Foundry Sand System Fume Hood and Baghouse

TYPE OF UNIT: Ventilation System and Baghouse

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 23

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of a steel dust collection and fume hood system connected to the spilled sand handling equipment, which captures spilled foundry sand from throughout the foundry. Conbraco–Pageland transfers the dust and fumes to the sand system baghouse and subsequently collects the dust in fabric totes with a capacity of 1 cubic yard. The sand system fume hood and baghouse is approximately 65 ft long, 25 ft wide, and 30 ft tall. Along the eastern side of the foundry is the sand system baghouse. Each unit is located on a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Fabric totes collect dust captured by the sand system baghouse at a rate of approximately 2.5 tons per day. Facility members sample the contents of the fabric totes to determine if the material is hazardous or non-hazardous before transferring the fabric totes, temporarily stored at the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area, off-site for disposal. Once the analytical results for leachable lead are received, totes with non-hazardous contents are shipped to the Ridgeland County Subtitle D Landfill. Totes that contain hazardous waste (D008) are shipped to a Subtitle C Landfill in Alabama for disposal.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the SWMU was in good condition. No overflow was observed and no staining was identified near or beneath the baghouse. No cracks were identified in the baghouse or the underlying concrete pad upon which the baghouse is located (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.6 SWMU 6 – Grinding Room Vent System and Baghouses

TYPE OF UNIT: Ventilation System and Baghouse

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 21

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of a steel dust collection system located in the grinding room and two baghouses located outside of the main Conbraco building. The grinding room baghouse is located outside the southeastern portion of the foundry along the eastern side and is approximately 12 ft wide, 25 ft long, and 30 ft tall. A second grinding room baghouse is also located in this area, but this unit is no longer operating. Each unit is located on a concrete pad, thereby preventing releases to the ground surface. Metallic dust generated during grinding activities from the grinding room baghouse is collected in steel drums (55 gal).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Fifty-five gal drums store metallic dust that is generated during operations in the grinding area and is subsequently routed to the grinding room baghouse. According to facility representatives, the grinding dust is considered non-hazardous and, due to the high copper content, is transferred off-site to a copper reclamation company.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the grinding room baghouse was in good condition. No overflow was observed and no staining was identified near or beneath the baghouse and drums. No cracks were identified in the baghouse, the drums, or the underlying concrete pad upon which the baghouse is located (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.7 SWMU 7 – Hot Slag Storage Area

TYPE OF UNIT: Collection Bin

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 3 and No. 6

PHYSICAL DESCRIPTION AND HISTORY:

This unit consists of a steel collection bin connected to a metal fume hood on the north end of the pouring deck. The unit is approximately 4 ft long, 4 ft wide, and 6 ft tall. The unit sits on top of a three ft tall steel platform. The unit is situated upon a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The hot slag produced during foundry operations is skimmed off of the molten bronze in the pour ladle and transferred to the collection bin by hand. The hot slag contains various metals including lead and is considered characteristic for lead (D008). According to facility personnel, the slag is sold each week to a metals reclamation company.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the hot slag collection bin was in good condition. No overflow was observed and no staining was identified near or beneath the unit. No cracks were identified in the bin or the underlying concrete pad (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.8 SWMU 8 – Furnace Deck Hazardous Waste Hopper

TYPE OF UNIT: Collection Bin

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo Not Available

PHYSICAL DESCRIPTION AND HISTORY:

The furnace deck hazardous waste hopper is a steel collection bin usually located on or near the furnace deck. This unit is typically situated upon a concrete pad, thereby preventing releases to the ground surface. SWMU 8 however, was not present at the time of the VSI. According to facility representatives the unit is approximately 3 ft long, 3 ft wide, and 3 ft tall.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Furnace Deck Hazardous Waste Hopper (SWMU 8) collects various items (i.e., Koaol wool, stopper rods, etc.) that have been contaminated with fumes from the furnaces. The materials collected in the waste hopper are disposed of as lead-contaminated (D008) hazardous waste.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Furnace Deck Hazardous Waste Hopper (SWMU 8) was not on or near the pour deck, however, no evidence of a release was observed in the area where the unit is typically situated (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.9 SWMU 9 – Foundry Sand Collection System

TYPE OF UNIT: Spilled Sand Conveyor, Vibrating Conveyor, Shakeout Building, and Return Sand Elevator

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 2, 7, 8, 9, 10, and 11

PHYSICAL DESCRIPTION AND HISTORY:

Throughout the foundry grated sumps collect spilled foundry sand. The sumps are typically approximately 8 ft wide, 6 ft deep, and of varying length. A Spilled Sand Conveyor (SWMU 9a) is present within the sumps, and conveys spilled foundry sand to the Return Sand Elevator (SWMU 9d). The Vibrating Conveyor (SWMU 9b) is an enclosed conveyance upon which facility members transfer the cooled castings to the Shakeout Building (SWMU 9c). The vibration of the conveyor provides physical agitation necessary to remove the castings from molding sands, metal fragments, and core pieces. At the enclosed Shakeout Building (SWMU 9c), facility members shake the castings on a perforated screen that further separates them from the molding sands, metal fragments, and core pieces. Facility members then transfer the molding sands, metal fragments, and core pieces to the Return Sand Elevator (SWMU 9d). The Return Sand Elevator (SWMU 9d) is actually an approximately 4 ft wide, enclosed conveyor that transfers spilled foundry sand from the sumps and the molding sands, metal fragments, and core pieces from the Shakeout Building (SWMU 9c) to the rotary screen located near the sand storage tank. The Spilled Sand Conveyor (SWMU 9a) and the Vibrating Conveyor (SWMU 9b) are both approximately 4 ft wide and 100 ft long, and the Shakeout Building (SWMU 9c) is approximately 30 ft long, 20 ft wide, and 20 ft tall. Most of the components of this unit are centrally located in the foundry area of the main building. Each unit is above a concrete catch basin, thereby preventing releases to the ground surface. Facility members routinely remove sand in the catch basins by hand and place the material onto the Spilled Sand Conveyor (SWMU 9a) in order to return the sand to the Foundry Sand Collection System (SWMU 9).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Foundry Sand Collection System (SWMU 9) manages foundry sands, molding sands, metal fragments, and core pieces from multiple sources along the foundry line. Foundry sands typically are characteristic for lead (D008).

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the various units of the Foundry Sand Collection System (SWMU 9) were in good condition. No overflow was observed and no staining was identified near or beneath the units. No cracks were identified in the units or the concrete pad (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.10 SWMU 10 – Waste Sand Scalp-Off Area

TYPE OF UNIT: Fabric Tote

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 12 and 13

PHYSICAL DESCRIPTION AND HISTORY:

The Waste Sand Scalp-Off Area (SWMU 10) is situated beneath the 250-ton sand storage tank, which contains the foundry sand used to make molds for the foundry. A small amount of sand is routinely removed from the sand storage tank and treatment system. Following removal, the sand travels down a steel chute to the Waste Sand Scalp-Off Area (SWMU 10). One cubic yard, fabric totes situated inside a cardboard box on wooden pallets capture the spent foundry sands. The pallets are approximately 4 ft wide and 4 ft long, and the area is labeled as a hazardous waste storage area. The unit is situated on the concrete floor of the main Conbraco building, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

To make room for the new sand that is periodically added to the sand storage tank, facility representatives routinely "scalp-off" used foundry sands from the tank, which results in foundry sand being conveyed down a chute, and collected at a rate of approximately 6 to 8 tons per day. The waste foundry sands typically are characteristic for lead (D008). Once full, facility members transfer the fabric totes from this unit to the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) prior to being shipped to Canada for disposal as a hazardous waste.

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Ground Water (L) Subsurface Gas (L)

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Waste Sand Scalp-Off Area (SWMU 10) was in good condition. No overflow was observed and no staining was identified near or beneath the system. Fabric totes had no tears and the concrete pad had no cracks at the location of the scalp box (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.11 SWMU 11 – Rotary Screen Tailings Hazardous Waste Storage Area

TYPE OF UNIT: Collection Bin

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 14

PHYSICAL DESCRIPTION AND HISTORY:

Cooled bronze castings and sand molds are sent to the rotary screen from the foundry. The rotary screen is a large steel screen that separates metal fragments and core pieces from foundry sands. Screened foundry sand is returned to the sand storage tank and metal fragments and core pieces are sent to the Rotary Screen Tailings Hazardous Waste Storage Area (SWMU 11). The Rotary Screen Tailings Hazardous Waste Storage Area (SWMU 11) consists of a 1 cubic yard (yd^3) steel bin located beneath and slightly south of the sand storage tank. The storage bin is connected to the rotary screen by a steel chute. SWMU 11 is located on a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Conbraco transfers miscellaneous debris (i.e., metal fragments, core pieces, etc.) removed from the foundry sand at the rotary screen through a chute to the Rotary Screen Tailings Hazardous Waste Storage Area (SWMU 11). The metal tote collects these items until facility members transfer the material to the ballmill so that most of the constituents may be reusable. Although most of the items are recycled, the bin and the area are both labeled as hazardous waste storage areas due to the presence of lead-contaminated sand (D008). Therefore, units that receive waste from this unit for treatment, such as the ballmill, must also be considered hazardous waste management units.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OF RELEASE(S):

At the time of the VSI, the Rotary Screen Tailings Hazardous Waste Storage Area (SWMU 11) was in good condition. No overflow was observed and no staining was identified near or beneath the bin. There were no cracks in the metal bin or in the underlying concrete pad upon which the bin was located (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.12 SWMU 12 – Foundry Wheelabrator Hazardous Waste Collection Area

TYPE OF UNIT: Tailings Storage Area and Hazardous Waste Collection Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 15 and 16

PHYSICAL DESCRIPTION AND HISTORY:

The foundry wheelabrator is a steel, shot-blast machine. Facility members use this unit to fire stainless steel shots at the brass valves to smooth and clean the surfaces and edges. The foundry wheelabrator is located south of the foundry sand collection system and is approximately 12 ft wide, 12 ft long, and 25 ft tall. The foundry wheelabrator also includes an approximately 4 ft by 4 ft by 4 ft metal bin for collecting miscellaneous debris (i.e., metal fragments, core pieces, etc.) and a fabric tote to collect the used shot and foundry sand. The unit is situated on a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Shot and foundry sand (D008) removed from the castings in the foundry wheelabrator are transferred down a steel chute and collected in a 1 cubic yard fabric tote sitting upon a wooden pallet. The area is labeled as a hazardous waste storage area. Once filled, the fabric totes are stored in the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) before being shipped to Canada for disposal as a hazardous waste (D008). Miscellaneous debris is collected in a metal bin (tailings storage area), which is labeled as a hazardous waste storage area.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the foundry wheelabrator and metal bin were in good condition. No overflow was observed and no staining was identified near or beneath the system. Fabric totes had no tears and the metal bin, wheelabrator, and concrete pad had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.13 SWMU 13 – Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area

TYPE OF UNIT: Waste Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 17, 18, and 19

PHYSICAL DESCRIPTION AND HISTORY:

The Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) area is located on the eastern side of the foundry in the northeast corner, adjacent to the loading dock. The area is approximately 20 ft wide and 25 ft long. At the time of the VSI, 16 fabric totes were being stored on wooden pallets or metal shelves in the hazardous waste storage area. This unit is situated upon a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) stores foundry sands collected at the Waste Sand Scalp-Off Area (SWMU 10) and the Foundry Wheelabrator Hazardous Waste Collection Area (12), as well as dust collected at the Ballmill Baghouse (SWMU 17c). At the time of the VSI, the only waste containers in the area were fabric totes that will be shipped to Canada for disposal as hazardous waste (D008).

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) was orderly and in good condition. No overflow was observed and no staining was identified near or beneath the fabric totes. The totes had no tears and the underlying concrete pad holding the totes had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	
No Further Action	(X)
Confirmatory Sampling	( )
RFI Necessary	( )

4.14 SWMU 14 – Compressor Area Hazardous Waste Drum Storage Area

TYPE OF UNIT: Drum Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 22

PHYSICAL DESCRIPTION AND HISTORY:

The compressor area is located adjacent to the northeastern exterior wall of the main Conbraco building. The area is a concrete-walled area approximately 50 ft wide and 50 feet long. At the time of the VSI, the area contained two 55-gal, steel drums, which were both closed and full. The drums were located on a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Both drums were labeled as hazardous waste, however one hazardous waste labels was blank. According to the other label, the drums contained rags and wipes used to clean the machines (D008 waste). No accumulation date was observed on either drum. Facility representatives indicated that these drums should not be in this area and would be moved to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) prior to disposal.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, these drums were in good condition. No overflow was observed and no staining was identified near or beneath them. Drums had no holes and the underlying concrete pad holding the drums had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)[1]
	Confirmatory Sampling	( )
	RFI Necessary	( )

COMMENTS:

[1] These drums were improperly labeled and inappropriately located in an area not intended to store hazardous waste. As indicated by facility representatives, these drums should be moved to the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) and no hazardous waste should be stored in this area in the future.

4.15 SWMU 15 – Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area

TYPE OF UNIT: Waste Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 26, 27, and 28

PHYSICAL DESCRIPTION AND HISTORY:

The Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) is located in the parking area south of the foundry and east of the machine shop. The area is approximately 160 ft wide, 30 ft long, and 20 ft tall and covered with a corrugated-metal roof. Waste is stored on pallets upon a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) stores foundry sands collected at the Sand System Baghouse (SWMU 5) and Ballmill Area (SWMU 17). SWMU 15 also stores totes from the Metallurgical Baghouse (SWMU 4), waste from the Miscellaneous Non-Hazardous Waste Storage Areas (SWMU 2), and waste from the Furnace Deck Hazardous Waste Hopper (SWMU 5).

The Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) is divided in three sections: hazardous waste, recyclable materials, and non-hazardous waste. The northern portion of the area stores the non-hazardous waste. At the time of the VSI, this area contained four 40-yd^3 rolloffs containers and five fabric totes containing non-hazardous foundry sand. The rolloffs contained miscellaneous non-hazardous solid waste, including broken cores that had not been used in the sand molding process. The middle section of the area contained various recyclable items, as well as eight fabric totes that had been sampled but for which the analytical results had not yet been received. Hazardous waste is stored in the southern portion of the area, and two covered 40-yd^3 rolloffs containing foundry sands removed from the ballmill were present. The hazardous waste will be shipped to Canada for disposal as a hazardous waste (D008), and the non-hazardous waste will be transported to the Ridgeland County Subtitle D Landfill for disposal. In addition, scrap metal is stored just south of the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15).

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15) was in relatively good condition. No overflow was observed and no staining was identified near or beneath the various items. Waste containers and the underlying concrete pad holding these containers had neither cracks nor tears (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:		
	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.16 SWMU 16 – Old Sand Storage Tank

TYPE OF UNIT: Storage Tank

PERIOD OF OPERATION: 1998–2000

PHOTOGRAPH NUMBER(S): Photo No. 29

PHYSICAL DESCRIPTION AND HISTORY:

The Old Sand Storage Tank (SWMU 16) is a steel, vertical storage tank located just south of the foundry and east of the machine shop adjacent to the ballmill area. The tank is approximately 10 ft wide, 10 ft long, and 20 ft tall. The unit is located on a steel platform approximately 12 ft tall. This unit is situated upon a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Old Sand Storage Tank (SWMU 16) is no longer being used. From 1998 to 2000, Conbraco–Pageland used a thermal treatment unit, or thermal reclaimer, to reclaim the foundry sands. SWMU 16 was used to store the thermally treated sand that had been processed in the reclamation unit. In 2000, Conbraco–Pageland learned that these thermally processed sands still contained lead concentrations that exceeded the regulatory limits and were considered D008 waste. As a result, the facility terminated use of the Thermal Treatment Unit (SWMU 17d) and Old Sand Storage Tank (SWMU 16).

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Old Sand Storage Tank (SWMU 16) was in good condition. There was no staining identified near or beneath the tank, and both the tank and the underlying concrete pad had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur. In addition, exposure potential is low because no hazardous waste or hazardous constituents are managed in this unit.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.17 SWMU 17 – Ballmill Area

Hazardous Waste Hopper Storage Area (SWMU 17a)
Ballmill Screens and Small Pieces Storage Drum (SWMU 17b)
Ballmill Baghouse (SWMU 17c)
Former Thermal Treatment Unit Area (SWMU 17d)

TYPE OF UNIT: Hazardous Waste Hopper Storage Area, Ballmill Screens and Small Pieces Storage Drum, and Ballmill Baghouse, Former Thermal Treatment Unit

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 30, 31, 32, 33, and 34

PHYSICAL DESCRIPTION AND HISTORY:

The Ballmill Area is located in the southwestern corner of the foundry, adjacent to the machine shop. The Ballmill Area contains a Hazardous Waste Hopper Storage Area (SWMU 17a) along the southern wall to store bins from the Rotary Screen Trailings Hazardous Waste Storage Area (SWMU 11) and the Foundry Wheelabrator Hazardous Waste Collection Area (SWMU 12) prior to their contents being processed in the ballmill. The Ballmill Screens and Small Pieces Storage Drum (SWMU 17b) is located in the southwestern corner along the western wall. The screen is the feature farthest south and the ballmill is on the northern end of the unit along with a feeder bin. A Ballmill Baghouse (SWMU 17c) is also located along the southern wall. One cubic yard fabric totes collect the sand and dust captured in the baghouse. All units are situated on the concrete floor of the main Conbraco building, thereby preventing releases to the ground surface.

From March 1998 to March 2000, Conbraco–Pageland operated a thermal-processing unit (Former Thermal Treatment Unit [SWMU 17d]) in the Ballmill Area (SWMU 17) to prepare the foundry sands for reuse in the casting process. At the time of the VSI, the Former Thermal Treatment Unit (SWMU 17d) had been removed from the area. The Former Thermal Treatment Unit (SWMU 17d), also referred to as the Thermal Reclaimer, heated the sand in a rotary kiln to approximately 1,500 degrees Fahrenheit, causing the vitrification of the lead-bearing sand. This vitrification resulted in the removal of the binders in the sand, which allowed the reuse of the sand in the manufacturing process. The vitrification also bound the lead to the silica, which reduced the levels of leachable lead in the sand. Thus, Conbraco believed that these "thermally processed sands" no longer needed to be treated as hazardous waste. Conbraco however, later learned that the thermally processed sands still contain lead concentrations that exceeded the regulatory limits. In response to Paragraph 25 a 2004 CACO, Conbraco decommissioned and decontaminated the Former Thermal Treatment Unit in March 2000 and developed the *Thermal Treatment Unit Closure Report*. This Closure Report has been submitted to EPA and is currently awaiting approval. The ballmill is situated in the same location that was formerly occupied by the decommissioned Thermal Treatment Unit.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

A forklift is used to dump the contents of the hoppers containing D008 waste from the Hazardous Waste Hopper Storage Area (SWMU 17a) into the ballmill unit. The ballmill unit separates the metal fragments, cores, and sand using a crushing and grinding process. Larger recovered metal pieces are returned to the furnace, and smaller metal pieces are collected in 55 gal drums. After separating out metal fragments, Conbraco transfers the metal pieces to the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) and subsequently sells the material to off-site metal reclamation companies. Bins collect the sand removed by the screens, which is transferred to a roll-off container located at the Outside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 15). Conbraco ships waste foundry sand to the Subtitle C Landfill in Emile, Alabama for disposal as D008 waste. The Ballmill Baghouse (SWMU 17c) captures the dust created by the ballmill and collects the dust in fabric totes. The facility transfers the totes containing the dust to the Inside Non-Hazardous and Hazardous Waste Less-Than-90-Day Storage Area (SWMU 13) and subsequently ships the material to Canada for disposal as a hazardous waste (D008).

RELEASE PATHWAYS:	Air (M)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

HISTORY AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the Ballmill Area (SWMU 17) was in good condition. Some staining identified beneath the units on the concrete floor. The units and the underlying concrete pad, however had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because, although some foundry sand and ballmill dust appeared to have been spilled on the concrete floor, no release to the environments has occurred or is likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.18 SWMU 18 – Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area

TYPE OF UNIT: Waste Storage Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 35, 36, and 37

PHYSICAL DESCRIPTION AND HISTORY:

The Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) is in the parking area south of the machine shop. SWMU 18 is approximately 75 ft wide, 40 ft long, and 20 ft tall and is covered with a corrugated-metal roof. Conbraco stores a stack of empty drums just north of the area. All of the drums were situated on plastic, spill-containment pallets on a concrete pad, thereby preventing releases. A 3,000-gal plastic used oil tank is also located in this area.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) stores drums from the Metallurgical Baghouse (SWMU 4), Foundry Miscellaneous Hazardous Waste Satellite Accumulation Areas (SWMU 3), Machine Shop Still Bottoms Satellite Accumulation Area (SWMU 19), and Machine Shop Miscellaneous Hazardous Waste Satellite Accumulation Areas (SWMU 20). Drums from the Foundry Miscellaneous Non-Hazardous Waste Storage Areas (SWMU 2) are also stored at the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18). The drums contained floor sweeping, grinding dust, waste foundry sand and other miscellaneous waste. Some of this waste contains leachable lead at levels exceeding the regulatory limit and, as a result, the material is characterized as a D008 waste. This unit also contains a 3,000-gal, plastic, used oil tank which receives used oil via a hard-pipe connected to the machine shop.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OF RELEASE(S):

The Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) was orderly and in good condition. No overflow was observed and no staining was identified near or beneath the drums or the used oil tank. The drums and the underlying concrete pad had no holes or cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.19 SWMU 19 – Machine Shop Still Bottoms Satellite Accumulation Area

TYPE OF UNIT: Waste Drum

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photo No. 38

PHYSICAL DESCRIPTION AND HISTORY:

This unit consisted of a 55-gal, steel drum located in the air compressor room south of and adjacent to the machine shop. The drum was situated on a metal, spill-containment pallet. The area is labeled as a satellite accumulation area. This unit is located upon a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The machine shop still separates petroleum solvents from sludge. The still bottoms generated at this still are collected in a 55-gal drum, which is located in the Machine Shop Still Bottoms Satellite Accumulation Area (SWMU 19). When full, the drum is transferred to the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) where the drum is stored prior to disposal as a D008 waste.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

HISTORY AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the drum was in good condition, and there was no staining near or beneath the pallet. The drums and underlying concrete pad had no holes or cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.20 SWMU 20 – Machine Shop Miscellaneous Hazardous Waste Satellite Accumulation Areas

TYPE OF UNIT: D008 Drums, Used Oil Catch Basins, and D006 Drum in the Tool Crib Area

PERIOD OF OPERATION: 1998–Present

PHOTOGRAPH NUMBER(S): Photos No. 39, 40, and 41

PHYSICAL DESCRIPTION AND HISTORY:

This unit consisted of various 55-gal, steel drums located in the machine shop area, which were used to collect miscellaneous hazardous waste and used oil generated by machining operations. Each hazardous waste satellite accumulation area drum is situated on a metal, spill-containment pallet approximately 8 ft long, 4 ft wide, and 6 inches (in) tall. Two steel Used Oil Catch Basins are also located in the northern portion of the machine shop that are approximately 3 ft long, 3 ft wide, and 1 ft tall. Both of these catch basins are on top of a plastic catch basin that is approximately 8 ft long, 4 ft wide, and 6 in tall. Each unit is situated on a concrete pad, thereby preventing releases to the ground surface.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The waste satellite accumulation drums are used for the collection of floor sweepings (D008 waste), cadmium dust (D006 waste), and other miscellaneous items (e.g., rags and wipes) contaminated during foundry operations or facility cleaning. When full, facility representatives transfer the drum to the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18) for disposal as hazardous waste. Drums containing used oil are placed on the two steel Used Oil Catch Basins. These catch basins are hard-piped to the 3,000-gal used oil tank located in the Outside Non-Hazardous and Hazardous Waste Drum Less-Than-90-Day Storage Area (SWMU 18).

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

At the time of the VSI, the drums and catch basins were in good condition. There was no staining identified near or beneath the pallets. The units had no holes, and the underlying concrete pad holding the units had no cracks (Booz Allen, 2008).

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no releases have occurred or are likely to occur.

RECOMMENDATION:	No Further Action	(X)
	Confirmatory Sampling	( )
	RFI Necessary	( )

4.21 AOC 1 – Sand Pile Area

TYPE OF UNIT: Sand Pile

PERIOD OF OPERATION: 1998–2005

PHOTOGRAPH NUMBER(S): Photo No. 25

PHYSICAL DESCRIPTION AND HISTORY:

From 1998 to 2005, Conbraco stockpiled thermally processed sand on-site in the field northeast of the facility. The sand pile was situated on plastic liners and was approximately 75 ft long, 20 ft wide, and 6 ft tall. At the time of the VSI, all waste sand had been removed from this area.

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The sand pile area was used for collection of thermally processed sands. Conbraco considered these processed foundry sands hazardous waste (D008) because of elevated lead concentrations.

In response to a 2004 CACO, Conbraco–Pageland submitted a Closure Plan to EPA in June 2004 and an addendum in June 2005 to address the pile of contaminated soil. In June 2005 EPA approved this plan. In July and August 2005, Conbraco excavated, stabilized, and disposed of these thermally processed sands and any underlying soils which exceeded lead concentrations of 400 mg/kg. After completion of closure activities, Conbraco collected and analyzed nine confirmation samples. The results of the confirmation samples for total lead concentrations ranged from non-detect to 33.5 mg/kg. As a result, Conbraco–Pageland developed a Closure Report, which Conbraco–Pageland then submitted to EPA in October 2005.

RELEASE PATHWAYS:	Air (L)	Surface Water (L)	Soil (L)
	Ground Water (L)	Subsurface Gas (L)	

CONDITION AND/OR EVIDENCE OR RELEASE(S):

The site is now an open field. Sparse vegetation currently covers the area. At the time of the VSI, there was neither observance of staining nor evidence of a release. While a historical release occurred, closure activities have been completed and confirmatory sampling indicates that all contaminants exceeding risk-based screening levels have been removed from the unit.

EXPOSURE POTENTIAL:	Air (L)	Surface Water (L)	Soil (L)
	Groundwater (L)	Subsurface Gas (L)	

Exposure potential for this unit is low for all media because no hazardous waste or hazardous constituents remain in this unit after completion of closure activities. While a historic release to soil has been documented current release potential to all media is low.

RECOMMENDATION:	No Further Action	(X)[1]
	Confirmatory Sampling	( )
	RFI Necessary	( )

COMMENTS:

[1] Conbraco is currently awaiting EPA approval of the *Pageland Facility Foundry Sand Stockpile Closure Report*. No further action is recommended pending approval of the Closure Report.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this report is threefold:

1. To identify SWMUs and AOCs and subsequently evaluate them for releases or potential releases to all media;
2. To make preliminary determinations regarding releases of concern and the need for further actions, IMs, or stabilizations; and
3. To identify those SWMUs and AOCs which do not pose a threat to human health or the environment at the time of the VSI.

Section 4.0 provides this information for each SWMU and AOC identified at the site. No Further Action (NFA) is recommended for all SWMUs and AOCs at the Conbraco Pageland site because either no releases have occurred or all released hazardous constituents have been removed as part of closure activities. In addition, exposure potential from all units to all media is considered low primarily because hazardous and non-hazardous wastes are stored in appropriate containers above concrete pads, thereby preventing releases to soil, surface water, and groundwater. Exposure potential for air is low because baghouse units capture fumes and dusts generated by Conbraco operations.

6.0 REFERENCES

Booz Allen Hamilton. Visual Site Inspection Logbook. September 4, 2008.

Conbraco Industries. Response to Request for Information Pursuant to Section 3007 of RCRA. April, 28, 2000.

Conbraco Industries. Certification to Responses to Requests for Information Pursuant Section 3007 of RCRA. July 28, 2000.

Conbraco Industries. Responses to CEI/CDEI Inspection Report. October, 2000.

Conbraco Industries. Proposal for Foundry Material Stabilization. June 18, 2001.

Conbraco Industries. Proposal for Wheelabrator Sand Stabilization. February 20, 2002.

Hunton & Williams. Response to Request for Information Pursuant to Section 3007 of RCRA – Conbraco Industries, Inc., Pageland, South Carolina. April 28, 2000.

Hunton & Williams. Responses of Conbraco Industries, Inc. to Request for Information Pursuant to Section 3001 of RCRA. July 14, 2000.

RCRAInfo. Conbraco Pageland Site Detail Report. July 2010.

Shield Engineering, Inc. Thermal Treatment Unit Closure Report. May 7, 2004.

Shield Engineering, Inc. Pageland Facility Foundry Sand Stockpile Closure Report. October 21, 2005.

South Carolina Department of Natural Resources, Land, Water, and Conservation Division Ground-water Resources of Chesterfield County, South Carolina. 2004.

Trails.com. Topo Maps and Aerial Photos. October 13, 2008.

U.S. EPA. RCRA Post-Closure Care Permit Requirements Interim Status Clean Closure Equivalency Demonstration. August 6, 1992.

U.S. EPA. Request for Information Pursuant Section 3007 of RCRA. March 3, 2000.

U.S. EPA. Final Report, CDIE. July 12, 2000.

U.S. EPA. RCRA Compliance Evaluation Inspection. September 22, 2000.

U.S. EPA. Final Administrative Order on Consent, Dockets No. RCRA-04-2002-4250 and RCRA-04-2002-4251. October 21, 2001.

U.S. EPA. Final Complaint and Compliance Order (CACO), Docket No. RCRA-04-2003-4013. April 8, 2004.

U.S. EPA. Conditional Approval for Closure Plan for Pageland Facility Foundry Sand Stockpile. June 30, 2005.

RCRA FACILITY ASSESSMENT REPORT
Conbraco Industries, Inc.
Pageland, South Carolina

FIGURES

RCRA FACILITY ASSESSMENT REPORT
Conbraco Industries, Inc.
Pageland, South Carolina

TABLES

RCRA FACILITY ASSESSMENT REPORT
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ATTACHMENT 1:

PHOTOGRAPHIC LOG